WHAT IS CLAIMED IS:

1. A macrocyclic musk composition of matter consisting essentially of:

   (a) from about 40 up to about 60 weight % of cyclotetradecanone;

   (b) from about 40 up to about 60 weight % of Δ^3-cyclotetradecen-1-one;

   (c) less than 5 weight % of Δ^2-cyclotetradecen-1-one,

the weight ratio of cyclotetradecanone:Δ^3-cyclotetradecen-1-one being from about 6:4 down to about 4:6.

2. The composition of matter of claim 1 consisting essentially of:

   (a) about 50% by weight of cyclotetradecanone;

   (b) about 45% by weight of Δ^3-cyclotetradecen-1-one; and

   (c) less than about 2% by weight of Δ^2-cyclotetradecen-1-one.

3. A process for preparing a macrocyclic musk composition comprising the steps of:

   (a) admixing a cyclotetradecenone reactant mixture comprising greater than 45% by weight of Δ^3-cyclotetradecen-1-one and greater than 15% by weight of Δ^2-cyclotetradecen-1-one with a hydrogenation reaction solvent to form a solvent-reactant mixture with the weight ratio of solvent:cyclotetradecenone reactant mixture being from 20:70 up to 70:20;

   (b) treating the resulting solvent-reactant mixture with hydrogen in the presence of a chemo-selective hydrogenation catalyst in a concentration of from about 0.1% up to about 0.5% by weight of the reaction mixture, at a temperature in the range of from about 15°C up to about 35°C and at a pressure of from about 0 psig up to about 100 psig thus forming a hydrogenated product reaction mass, whereby a composition comprising, on a solvent-free basis, greater than 40% by weight of cyclotetradecanone, greater than 40% by weight of Δ^3-cyclotetradecen-1-one and less than 5% by weight of Δ^2-cyclotetradecen-1-one is produced; and

(c) recovering the resulting macrocyclic musk composition from the hydrogenated product reaction mass.

4. The process of claim 3 wherein the step of treating the solvent-reactant mixture with hydrogen causes the percentage of Δ^2-cyclotetradecen-1-one in the composition to be reduced over the period of time during which the hydrogenation reaction takes place, according to the algorithm:

$$\mathbf{P = A(exp)(-\theta^K/\alpha) + B}$$

wherein **P** represents the percentage of Δ^2-cyclotetradecen-1-one in the mixture being reacted with hydrogen; θ represents the time in minutes as measured from the commencement of the hydrogenation reaction; and **α, A, B, and K** represent constants; and wherein:

$\mathbf{P \geq 0;}$

$\mathbf{\theta \geq 0;}$

$\mathbf{15 \leq A \leq 30;}$

$\mathbf{0 \leq B \leq 5;}$

$\mathbf{2.8 \leq K \leq 4.0;}$ and

$\mathbf{2 \times 10^3 \leq \alpha \leq 40 \times 10^3.}$

5. The process of claim 4 wherein the rate of change of the percentage of Δ^2-cyclotetradecen-1-one with respect to time, $\mathbf{dP/d\theta}$, in the reactant-solvent mixture being hydrogenated is according to the algorithm:

$$\mathbf{dP/d\theta = -AK\theta^{K-1}\alpha^{-1}(exp)(-\theta^K\alpha^{-1}).}$$

6. The process of claim 4 wherein the algorithm is:

$$\mathbf{\theta = \{\alpha \ln A(P - B)^{-1}\}^{1/K}}$$

7. The process of claim 3 wherein the cyclotetradecenone reactant mixture is prepared by (i) treating 3-hydroxycyclotetradecan-1-one in the vapor phase with a dehydrating quantity and concentration of anhydrous aluminum oxide particles at a dehydrating temperature and pressure to form a dehydration product reaction mass and then (ii) recovering the cyclotetradecenone reactant mixture from said dehydration product reaction mass.

8. The process of claim 7 wherein the dehydration reaction temperature is in the range of from about 360°C up to about 400°C. and the dehydration reaction pressure is from about 1 mm Hg up to about 20 mm Hg and the size range of each of the aluminum oxide particles is from about 4 mesh up to about 8 mesh.

9. The process of claim 3 wherein the chemo-selective hydrogenation catalyst is a supported palladium catalyst containing from about 2 weight % palladium up to about 10 weight % palladium, selected from the group consisting of palladium on carbon, palladium on calcium carbonate and palladium on barium sulfate.

10. The process of claim 9 wherein the hydrogenation reaction solvent is selected from the group consisting of methanol, ethanol, 2-propanol, 1-propanol, acetone, methylethylketone, methylisobutylketone and tetrahydrofuran.

11. The process of claim 9 wherein the chemo-selective hydrogenation catalyst is 5 weight % palladium on carbon; the hydrogenation reaction solvent is 2-propanol;the hydrogenation reaction temperature is about 35°C; the hydrogenation reaction pressure is about 100 psig; and the weight ratio of solvent:reactant mixture is about 50:50.

12. A process for augmenting, enhancing or imparting a musk aroma in or to a consumable material selected from the group consisting of a perfume composition, a perfumed article and a perfumed polymer comprising the step of intimately admixing an aroma augmenting, enhancing or imparting quantity and concentration of the composition of claim 1 with a consumable material base.

13. A process for augmenting, enhancing or imparting a musk aroma in or to a consumable material selected from the group consisting of a perfume composition, a perfumed article and a perfumed polymer comprising the step of intimately admixing an aroma augmenting, enhancing or imparting quantity and concentration of the composition of claim 2 with a consumable material base.

14. A process for augmenting, enhancing or imparting a musk aroma in or to a consumable material selected from the group consisting of a perfume composition, a perfumed article and a perfumed polymer comprising the step of intimately admixing an aroma augmenting, enhancing or imparting quantity and concentration of the composition of claim 3 with a consumable material base.

15. A process for augmenting, enhancing or imparting a musk aroma in or to a consumable material selected from the group consisting of a perfume composition, a perfumed article and a perfumed polymer comprising the step of intimately admixing an aroma augmenting, enhancing or imparting quantity and concentration of the product of claim 4 with a consumable material base.

16. A process for augmenting, enhancing or imparting a musk aroma in or to a consumable material selected from the group consisting of a perfume composition, a perfumed article and a perfumed polymer comprising the step of intimately admixing an aroma augmenting, enhancing or imparting quantity and concentration of the product of claim 5 with a consumable material base.

17. A perfume composition comprising a perfume base and intimately admixed therewith an aroma augmenting, enhancing or imparting quantity and concentration of the composition of claim 1.

18. A perfumed article selected from the group consisting of a soap, a detergent and a cosmetic comprising a perfumed article base and intimately admixed therewith an aroma augmenting, enhancing or imparting quantity and concentration of the composition of claim 1.